# Aviation Investigation Final Report

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| **Location:** | Ruidoso, New Mexico | **Accident Number:** | GAA18CA571 |
| **Date & Time:** | September 29, 2018, 15:10 Local | **Registration:** | N894NA |
| **Aircraft:** | Eurocopter AS350 | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Hard landing | **Injuries:** | 3 None |
| **Flight Conducted Under:** | Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Unspecified) | | |

## Analysis

The helicopter pilot was conducting an emergency medical services flight. He reported that, while en route to a ski resort to pick up a patient, he decided to conduct an eastbound reconnaissance over the landing site to scan for obstacles. He saw two cables in front and below the helicopter 's flightpath and initiated a go-around. He added power to clear the cables, and once the tail cleared the cables, he lowered the collective due to a slight drop in the main rotor speed. As he continued the go-around, he initiated a 180º left turn to attempt an approach to the landing site. During the westward approach and while the helicopter was about 20 ft above ground level, he raised the collective to reduce the descent rate, and the main rotor speed subsequently decayed. He felt that, due to the "faster than normal" descent rate, he would not be able to cushion the landing. Before touchdown, a medical crewmember spotted an elevated steel barrier cable below the helicopter, and the pilot made a 90º left turn to avoid a tail rotor strike. The helicopter subsequently touched down hard, bounced, rotated about 180º counterclockwise over the barrier cable, slid down an embankment, and came to rest upright.

The helicopter sustained substantial damage to the fuselage and vertical stabilizer.

The director of operations reported that there were no preaccident mechanical failures or malfunctions with the helicopter that would have precluded normal operation.

The pilot reported that, during his preflight preparation, he did not calculate the hover-in-ground-effect value, the hover out-of-ground-effect value, or the density altitude for the designated landing site. He added that the accident flight was his second flight in a high-altitude, mountainous environment and that most of his flight hours were accumulated at sea level. He was not aware that the ski resort provided an approach, landing, and takeoff procedure. He added that he should have completed the go-around and circled back around to land.

A Federal Aviation Administration inspector reported that, at the time of the accident, the density altitude for the landing site at 9,793 ft was over 12,000 ft.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain the proper descent rate during landing. Contributing to the accident were the pilot's failure to conduct preflight performance calculations, which resulted in his operating the helicopter in high-density altitude conditions, and his lack of experience in high-altitude, mountainous flying.

### Findings

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| **Aircraft** | Descent rate - Not attained/maintained |
| **Personnel issues** | Aircraft control - Pilot |
| **Personnel issues** | Performance calculations - Pilot |
| **Personnel issues** | Total experience - Pilot |
| **Environmental issues** | High density altitude - Effect on operation |
| **Organizational issues** | CRM/MRM training - Operator |

# Factual Information

## History of Flight

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| **Landing-flare/touchdown** | Miscellaneous/other |
| **Landing-flare/touchdown** | Hard landing (Defining event) |
| **Landing-flare/touchdown** | Abnormal runway contact |
| **Landing-flare/touchdown** | Collision with terr/obj (non-CFIT) |

## Pilot Information

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| **Certificate:** | Commercial; Flight instructor | **Age:** | 53,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Right |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | 4-point |
| **Instrument Rating(s):** | Airplane; Helicopter | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Helicopter | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | April 4, 2018 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | April 12, 2018 |
| **Flight Time:** | (Estimated) 16818 hours (Total, all aircraft), 3526 hours (Total, this make and model), 16818 hours (Pilot In Command, all aircraft), 56 hours (Last 90 days, all aircraft), 26 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Eurocopter | **Registration:** | N894NA |
| **Model/Series:** | AS350 B2 | **Aircraft Category:** | Helicopter |
| **Year of Manufacture:** | 1996 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 2904 |
| **Landing Gear Type:** | Skid | **Seats:** | 5 |
| **Date/Type of Last Inspection:** | April 9, 2018 100 hour | **Certified Max Gross Wt.:** | 4961 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Turbo shaft |
| **Airframe Total Time:** | 8199.4 Hrs at time of accident | **Engine Manufacturer:** | Turbomeca |
| **ELT:** | | **Engine Model/Series:** | Arriel 1D1 |
| **Registered Owner:** | Roberts Aircraft Co | **Rated Power:** | |
| **Operator:** | Trans Aero Limited | **Operating Certificate(s) Held:** | Commuter air carrier (135) |
| **Operator Does Business As:** | Trans Aero MedEvac | **Operator Designator Code:** | O4VA |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | KSRR,6810 ft msl | **Distance from Accident Site:** | 14 Nautical Miles |
| **Observation Time:** | 21:15 Local | **Direction from Accident Site:** | 77° |
| **Lowest Cloud Condition:** | | **Visibility** | |
| **Lowest Ceiling:** | | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 9 knots / 17 knots | **Turbulence Type Forecast/Actual:** | None / None |
| **Wind Direction:** | 220° | **Turbulence Severity Forecast/Actual:** | N/A / N/A |
| **Altimeter Setting:** | 30.27 inches Hg | **Temperature/Dew Point:** | 25°C / 5°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Artesia, NM (ATS ) | **Type of Flight Plan Filed:** | Unknown |
| **Destination:** | El Paso, TX | **Type of Clearance:** | Unknown |
| **Departure Time:** | | **Type of Airspace:** | Class G |

## Wreckage and Impact Information

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| **Crew Injuries:** | 3 None | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 3 None | **Latitude, Longitude:** | 33.396667,-105.785835(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Nepomuceno, Eleazar |
| **Additional Participating Persons:** | Dennis Beattie; FAA; Albuquerque, NM |
| **Original Publish Date:** | March 20, 2020 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | This accident report documents the factual circumstances of this accident as described to the NTSB. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=98387 |